

Libby Area Technical Assistance Group, Inc. PO Box 53, Libby, MT 59923 2010 – Q1 Report January 1 through March 31, 2010

During Q1 of 2010, a total amount of \$1,749 was spent on grant activities. Of this approximately \$17,263.50 was matched with in-kind hours contributed by the board members.

- 1) Meetings Held:
 - a. LATAG held a Regular Board meeting on January 12, 2010.
 - b. LATAG held an Executive Board meeting on January 6, 2010.
 - c. LATAG held an Executive Board meeting on January 9, 2010.
 - d. LATAG held a Regular Board meeting on February 9, 2010.
 - e. LATAG held a Regular Board meeting on March 9, 2010.
 - f. LATAG held an Executive Board meeting on March 23, 2010.

Minutes or notes from each regular meeting are attached. Executive board meeting minutes are not available at this time.

- 2) First Quarter Reports
 - a. LATAG Technical Advisor Terry Spear reviewed proposed RODs for OU1 and OU2. His comments are attached.
 - b. EPA reports- No report.
 - c. DEQ reports- No report.
- 3) Sub-Committee Reports
 - a. Nominating Committee LeRoy Thom (chairperson)
 - i. January: No report.
 - ii. February: No report.
 - iii. March: No report.
 - b. Communications Committee Phillip Erquiaga (chairperson)
 - i. January: No report.
 - ii. February: No report.
 - iii. March: No report.
 - c. O&M Committee Mike Noble and LeRoy Thom (co-chairpersons)
 - i. January: No report.
 - ii. February: No report.
 - iii. March: No report.
 - d. Technical Advisory Dr. Brad Black (chairperson)
 - i. January: No report.
 - ii. February: No report.
 - iii. March: No report.
- 4) Environmental Statement is attached summarizing LATAG's activities in the first quarter.



Environmental Results 2010 Q1

GOALS	MEASURES and TIMELINES	OUTCOMES
LATAG produces a newsletter with updates on the Libby Superfund cleanup progress and the latest developments.	The newsletter is produced four times a year or following technical advisors reports and/or significant site milestones.	The community learns about the site cleanup, progress, and decisions. Quarterly distribution of the newsletter will be reported.
		In addition comments submitted to LATAG will be tallied and reported.
TI LATAC 1 iv (LATAC	Timeline: Quarterly or as needed	The Quarterly Newsletter is typically distributed via hardcopy locally and via email to approximately 100 recipients.
The LATAG website (<u>www.LATAG.org</u>) has in depth information and documentation related to the Libby Superfund Site.	The website is updated on a monthly basis or more frequently as required to provide the most updated information possible. The website will be available	The LATAG website is continually updated with current information and will incorporate past records as time allows.
	for use for those in Lincoln County and for any person concerned about Libby Amphibole and associated issues.	The community learns about the site cleanup procedures, activity, progress, decisions, and other important matters.
		Comments submitted through the LATAG website will be tallied and reported.
	Timeline: Monthly Maintenance and updates.	During the 3rd Quarter of 2010 LATAG.org had 28,010 visitors.
LATAG holds regular monthly meetings generally on the second Tuesday of the month. These meetings are open to the public. Meetings are advertised in the	LATAG typically has an average of 20 participants at their regular monthly meetings.	The community learns about the site cleanup procedures, activity, progress, decisions, and other important matters.
local newspapers. In addition there are typically 3-4 special meetings a year.	Attendance at public meetings will be reported as well as the number of new and returning members and how they learned about the activities of LATAG.	The meetings provide the community with a forum for comments.
The LATAG Board is made up of	Timeline: Monthly for 5 years. LATAG Board Members submit in-kind	This furthers the LATAG goal in that the
volunteers that routinely spend their time on LATAG duties.	sheets monthly in accordance with grant requirements.	community learns about the site cleanup procedures, activity, progress, decisions, and other important matters.
The LATAG Executive Board holds	Timeline: Monthly. The LATAG Executive Board has an	This furthers the LATAC goal in that the
monthly meetings to conduct personnel (contractual) business for the LATAG.	average of 3-4 participants at their monthly meetings.	This furthers the LATAG goal in that the community learns about the site cleanup procedures, activity, progress, decisions, and other important matters.
Additionally various Committees hold meetings as needed to further support the LATAG goals.	Committee participation varies as needed. Timeline: Monthly for 5 years.	

Libby Area Technical Assistance Group, Inc. P. O. Box 53, Libby, MT 59923 January 12th, 2010 Regular Board Meeting Minutes

(Note: bold items within paragraphs are motions made and voted on as well as action items agreed upon)

Dr. Brad Black		
Nancy Hogan		
Donna Martin		
Phillip Erquiaga		
LeRoy Thom		
Mike Noble		
JoElyn Brus		
Guest Attendees:		
Ted Linnert EPA		
Dick Sloan DEQ		
Catherine LeCours DEQ (by phone)		
Robin Benson LCC		
D. C. Orr		
Vanessa Holder		
Contractor Attendees:		
LATAG Tec. Advisor – Terry Spear (by phone)		
1. Meeting began at approximately 7:10 p.m.		
2. EPA Report: Ted Linnert reported that the construction season is at an end. ERS is handling calls for cleaning and removal. Stinger Central Maintenance Building: cut in and vermiculite taken out. They will start on the Libby Hotel in March. There will be a public meeting on February 8 to give the annual up date talk about the construction season and schools. They will meet with the school board before the public meeting.		
3. DEQ: Catherine reported that they are working with the EPA and have submitted comments on GU1 and OU2. They are looking at sampling and analysis plan for OU4 and OU7. They will streamline the process to cause fewer disruptions to		

Properties for removal action:

homeowners.

Board Member Attendees:

Eileen Carney

- 75 interior for removal of attic insulation.
- 20 exterior for soil and 15-20 combinations.

They have inspected 78% of the properties identified in OU7. In sampling roads and alleys, they found nothing of concern. They will hold a public meeting maybe on March 10 to tell what they have found in their investigation.

Troy Schools: the high school has had removal done. The elementary school has nothing outside but there is some material in the walls but it is contained. They have not done any activity based sampling nor are there plans to do any.

Phillip asked about mold problems in homes cleaned by the EPA. Ted Linnert said some older places do not have attic vents. They are not supposed to improve the property. When they seal the attic after cleanup it might keep the mold inside. Some have put visquine over the vents, this exacerbates the mold problem.

Minutes: Phillip made a motion to approve. Nancy seconded. Approved after correcting typos.

Treasurer's report: We have 53,000 in grant money.

Committee Reports:

- 1. Technical Advisory committee: Dr. Black: the TA report was presented to the City/County Health Board and got a favorable response. They have approved the comments. Terry will not comment to individuals but they must work through the TAG rather than asking Terry questions. Dr. Black will arrange a meeting between Terry, Dave Berry and any TAG members who want to attend. It will be announced in the paper.
- 2. Communications: There has been no response to the report which was posted on the website. He has distributed it to our senators and representatives.
- 3. Nominations: There are two positions open on the board. LeRoy nominated Mike to be the chair and Phillip seconded. JoElyn nominated Eileen for secretary and Phillip seconded. We need a committee to sit down with the DEQ to clarify what is happening in Troy. We should invite the city, county, CAG and any other interested parties.

Old Business:

- 1. Grant Administrator: Mike had three calls, resumes are coming.
- 2. In Kind: Donna will email the forms to be turned in. There are no forms for the past two months.
- Minutes: Donna has found copies for July and August. We are still missing September and October New Business:
 - Buy a computer: Mike reported that we need a laptop for the grant administrator. It has been difficult to get information from former administrators.
 - 2. Phillip suggested an external hard drive with all documents backed up. Brad made a motion to buy a computer and backup the hard drive. Seconded by Nancy. Motion carried. We need to modify the contract.
 - Donna reported that the computer has a Windows operating system and the Dell is incompatible with it. The
 committee will handle the problems. JoElyn will chair, Donna, Phillip and David Murphy will work on the committee.
 - 4. Mike has room in a building he owns for a permanent office where everything could be stored and reports worked on. Rather than in a private house. Then records would always be available. The decision will be made after someone is hired.
 - 5. An audit needs to be done.
 - 6. Bruce Zwang will do the taxes. JoElyn will get everything ready.

JoElyn moved to close the Regular Board meeting at 9:00 p.m. Phillip seconded. Motion carried.

An Executive Board Meeting was opened at 9:07.

LeRoy nominated Mike Noble for chair. Phillip seconded. Nominations were closed.

JoElyn nominated Eileen for secretary. Leroy seconded. Nominations were closed.

Donna moved to adjourn the meeting. The Executive Board meeting was closed at 9:1

Libby Area Technical Assistance Group, Inc. P. O. Box 53, Libby, MT 59923 February 9th, 2010 Regular Board Meeting Minutes

(Note: bold items within paragraphs are motions made and voted on as well as action items agreed upon)

Eileen Carney
Dr. Brad Black
LeRoy Thom
Mike Noble
JoElyn Brus
Guest Attendees:
Catherine LeCours DEQ
Dick Sloan DEQ
Ted Linnert EPA
Rebecca Thomas EPA
Deborah McKean EPA
David L. Berry EPA
Bill Murray EPA
Mike Cirian EPA
Libby Faulk EPA
Nicole Bein EPA

Board Member Attendees:

- 1. Meeting began at approximately 7:10 p.m.
- 2. EPA Report: Victor reported on the public meeting held February 8. The investigation of OU4 draft will be done in March and will be a summary of everything to date and will be updated annually from now on. All the data will be in one place. Risk assessment: the export plant and screening plant had 18 comments. He wanted to know how LATAG wishes to participate in the process. OU5 remedy will be done in 2010. The remaining will be done in 2011. OU4 data collection: TAG should look at the plan and offer suggestions. He introduced the new people on the team: Libby Faulk who will replace Ted Linnert when he retires; Deborah McKean and Nicole Bein.

Mike reported on plans for the new season. They want to streamline the process and do it in a few months have rather than in years. There is still a lot to do on the Libby Hotel and they may not be able to start soon. As a Wood: the information has been presented to the school board. There are low levels within acceptable ranges. They took 41 samples of soil. The final report will be issued in the next couple of months.

- 3. DEQ: In OU7, they will continue with the Army Corps of Engineers. There are 120 properties 75 interior and 20 exterior and the rest are both interior and exterior. They need to decide where to dispose of the waste: in Libby or Troy or a combination. They are looking at costs. March 10 they will hold a public meeting in Troy with the Army Corps of Engineers.
- 4. Mine site OU3: Victor reported that they are continuing investigations. They are looking at what firefighters might encounter. They are re-evaluating temporary storage for the soil.
- 5. Minutes: Brad made a motion to approve the minutes of the January 12 meeting. JoElyn seconded. Motion carried after some minor corrections were made.

Old Business:

- 1: Computer: Dave had suggested that we get one that would be compatible with the printer. Jason will be asked for recommendations.
- Nominations: Leroy moved that we accept the nominations made at the last meeting. Brad seconded. Motion carried.
- 3. Grant administrator: There are four applications. Mike will contact them and set up interviews for Thursday or Friday.
- 4. Old minutes: JoElyn has notes for September and October. She will try to get something together on these.
- 5. Quarterly reports: We need more information to put them together. We are missing reimbursement# 64 and #65. If JoElyn can find the information, she will work on the second quarter and try to get it in.
- 6. Tarps covering trucks: the tarps have an overhang. The trucks from the golf course are not EPA's Mike invited any TAG member to ride along to see if there are any leaks. The soil is wetted down before tarps are put in place. Leroy suggested we be given written information about the problem.

New Business: The remedial action objectives paper will be reviewed by Dr. Brad Black to see if he suggests that Terry be tasked to review it.

Meeting was adjourned at 8:40

LATAG

LIBBY AREA TECHNICAL ASSISTANCE GROUP, INC.

January, 2010

NEWSLETTER

Introduction:

The Libby Area Technical Advisory Group (LATAG) operates with a Technical Assistance Grant from the EPA. The Group's chief role is to help the community participate in decision making at the Libby Asbestos Superfund Site. Congress made public involvement in decision making an important part of the Superfund process, insuring that those whose lives are affected by hazardous material contamination should have a say in actions to clean it up.

LATAG provides the following summary of its comments on EPA's proposed plans for clean up of Operable Units 1 (former export plant) and 2 (former screening plant). The summary and complete commentary document is available on request and will be available on the LATAG Website http://www.latag.org/. Questions and comments are welcome and can be addressed at the next regular LATAG meeting at 7 pm, January 12th, 2010 at Flathead Valley Community College in Libby, Montana. LATAG encourages the public to participate and respond!

The Libby Area Technical Advisory Group requested Dr. Terry Spear, PhD, the group's technical advisor, to provide commentary on EPA's proposed plans for remediation of Operable Units 1 and 2. The LATAG Board has been working with Dr. Spear under contract this past year, bringing his expertise to assist the group in review of clean-up activities and make recommendations. Dr. Spear is a professor of industrial hygiene at the University of Montana / Montana Tech., Butte, MT.

The LATAG Board has participated in the development of this document, and has reviewed and approved this final document generated by Dr. Spear for submission to the EPA in response to the request for commentary on proposed remedial plans for OU-1 and OU-2.

LATAG's summary of its comments on EPA's proposed plans for clean-up of Operable Units 1 (former export plant) and 2 (former screening plant) is available on the LATAG website at:

http://www.latag.org/OU1_OU2_summary.html

The complete commentary document is available on request and is available on the LATAG Website at: $http://www.latag.org/OU1_OU2_commentary.html$

Questions and comments are welcome and can be addressed at a regular LATAG meeting.

The next Regular LATAG meeting will be 7 pm, January 12th, 2010 at Flathead Valley Community College.

LATAG encourages the public to respond!

Public comments should be sent to:

Ted Linnert
Office of Communication & Public Involvement
U.S. Environmental Protection Agency, Region 8 - OC
1595 Wynkoop Street
Denver, CO 80202-1129
(303) 312-6119 / fax (303) 312-7110
toll free: 1-800-227-8917 ext. 6119
linnert.ted@epa.gov

EPA states the comment period ends Saturday, January 16th, 2010.

LATAG suggests that EPA receive all comments on or before Thursday, January 14th, 2010

Even if you're unable to comment by these dates you're encouraged to comment!

Date:

May 10, 2010

To:

Mike Noble

From:

Terry Spear

Re:

Quarterly Report Summary; January 1 – March 31, 2010.

January 1 – January 31. 2010

During this quarter I provided updates to TAG on my comments to the Proposed Plans for OU1 &2. I participated in the conference call on January 12, 2010 pertaining to the proposed plans.

February 1 – February 28, 2010 No activity

March 1 - March 31, 2009No activity

Libby Area Technical Assistance Group, Inc. minutes approved - LW 108 East 4th Street, Suite 206 P. O. Box 53 Libby, MT 59923 Phone/fax # (406) 293-5170 (automated fax reception)

March 9th, 2010 Regular Board Meeting Minutes

DATE: March 9th, 2010

Board Member Attendees: LeRoy Thom Eileen Carney JoElyn Brus Brad Black Phillip Erquiaga

LATAG Contractor Attendees: Leona Wood - GA

Guest Attendees:
Mike Cirian, EPA Libby
Ted Linnert, EPA Denver
Dick Sloan, MDEQ
Elizabeth Mack, ESQ (Locke Lord Bissell & Liddell, LLP)
Susan Rainey, ESQ (Locke Lord Bissell & Liddell, LLP)

Community Members: Laura Wilson, Libby Scott Frost, Libby Allen O'Brien, Libby Kurtis Kinder, Libby Gordon Sullivan, Libby Abe Troyer, Libby D. C. Orr, Libby Candy Harbaugh, Libby Donna Christianson, Libby Ed Surbrugg, Helena Katy Norris, Helena

Meeting Minutes: LeRoy Thom, Vice Chairman, called the meeting to order at 7:10 p.m.

DEQ Report - by: Dick Sloan

- There will be a preliminary report on GU1 and OU2.
- Also, there will be a review of the air sampling plan for Libby. There will be air monitoring stations set up in Libby.
- We will be finalizing the urban response plan for Troy that will be started this summer. We will set up an early
 response plan for Troy. In a month or two we will set up a community meeting before selecting the residents to be
 cleaned.
- We did have some meetings today. The directors of DEQ and the overall remediation manager from the state were
 up here to meet with attorneys representing the homeowners association.
- We also toured GU1, OU2, GU4 and OU5 with that group today.
- I think they are planning to be here this evening to visit the LATAG group. (They did attend)

EPA Report - by: Mike Cirian

There are a couple of things going on.

First, we are getting ready for construction season again and work will probably be kicking off mid April.

We had ten Korean visitors here today from the Korean Mine Recovery Corporation. They were looking at the mine; they have a mine similar to the W. R. Grace mine. They have a problem with tremolite.

They were here to find out what we were doing with the mine; so I let them know we were investigating, and we were in theeariy stage of that

I explained the "Libby project"; and they hadn't even thought of that. They also have a small town, it sounds like it is very similar to what we have here. So now they are very interested in going to the community and looking at what they can do there. Interesting!

Next, we have our ambient air program. We showed them the locations where the sampling stations will be in and around Libby.

- There will be one over by the former Beck's Cafe.
- There will be one in the ER parking lot. We will be monitoring somewhere over in that location.
- There will be one down by the export plant.
- One up along Highway 37.
- We will be looking at one over by the Stimpson site, somewhere along Highway 2.
- And another one out towards Whiskie hill.

We will be setting those up. We are going to try to get our first round done before construction kicks off,

Any Questions?

Phillip brought up questions regarding who is responsible to monitor with regards to the fire. EPA indicated there was no vermiculite in the buildings that burned. Phillip mentioned he believed one of the detects was Libby <u>amthibole</u> and he had heard four detects were of 4% <u>amosite</u>.

Mike Cirian said, "We are looking for the <u>ampobile</u>. It was not amosite. <u>Amosite</u> is what they first thought it was. When the Hygia Laboratories in the Sierra Madre went back and looked at it under TDM and they got magnesium Iron <u>lonic(ionized?)</u> sulfide "

Dick Sloan suggested Philip and he call John Konzen to sort out the responsibility for monitoring after the fire. Philip indicated it would be fine with him. Dick believes it would be covered by Montana's Clean Air Act. I believe monitoring of the Libby air particulate was added to Montana's Clean Air Act.

Mike Cirian said, EPA's next public meeting, hopefully will be in May and focusing on anthothyllite.

No Special Presentations:

Special Introductions: by Gordon Sullivan: The Citizens for a Healthy Community and Environmental Justice group found a legal firm that could provide advice and stand by our side as we worked through the next few years of the superfund site. These two attorney's Elizabeth Mack and Susan Rainey, from Dallas Texas are visiting us today.

Minutes Review and Approval: LeRoy – Can we have the meeting minutes Review and Approval? Do I have a motion for approval of the minutes for February 2010. JoElyn made the motion to accept the minutes as written; with a second by Eileen Carney. These minutes are unanimously approved.

Executive Board will Read and approve the Policies and By-laws. They will bring their decisions to next Regular Board meeting on April 6th 2010.

Sub-committee Reports

Communications Committee: Phillip what do you have to say?

There is one thing that I have not done. That is the 4th Quarter Report and I will make sure I have that done by March 19th. The 2^{hd} and 3rd Quarter Reports for 2009 have been completed and submitted.

JoElyn said, "We have no minutes on the web site since August of 2009. We will get those caught up."

Phillip said, "We recently did a <u>Newsletter in January 2010</u>. After being approved by Mike; that went out via E-mail, limited distribution and it was also placed on the web site." Brad said he did not see the newsletter on the web site. Phillip responded that essentially the <u>Newsletter headline was the front page of the website</u>.

Brad said, "The LATAG reports are not on the web site. Phillip responded these reports can be found at http://www.latag.org/OU1 GU2 summary.html. &http://www.latag.org/OU1 OU2 commentary.html.

O&M Committee: Michael attended the last O&M, although he is currently out of town.

Leroy said, "Mike Cirian was there anything of concern to us?" "Yes, we talked about the - You Dig Program".

- We are still trying to get the boundaries set up for that so we can offer our assistance. Provide info Re: If property
 has already been cleaned up, etc. A first response system, offered by EPA.
- Hazardous waste sites EPA is working to assist them when someone answers <u>Yes</u>on states form. Our Technical Advisory Committee: Brad, I've been gone this past week.

Old Business: None New Business:

D. C. Orr: Regarding the tarps, how do I request time at a LATAG meeting?

LeRoy, we talked about tarping. The EPA's current position states they feel EPA is compliant with tarping required by Montana's Department of Transportation. D. C. Orr, Given EPA's track record; <u>I am requesting LATAG review the work plan and render in writing a decision on whether or not the trucker's are adhering to that work plan.</u> The work plan specifically states that: "The tarps are to be secured in a manner that prevents the release of microscopic fibers." DOT has admitted that there is a lot of contamination along the highway 37.

LeRoy: LATAG will review the work plan! (Action Item)

D. C. Orr: In dealing with Troy, is that an EPA site or is it the State of Montana's responsibility.

Mike Cirian: It is an EPA site. EPA is responsible, but the DEQ is also responsible. They will be the direct lead on that project. Troy, OU7, is the State of Montana's 10% match according to the EPA grant.

Dick Sloan: EPA has the lead on GU I through OU6 and the DEQ supports them. DEQ is lead on OU7. The EPA put an analysis lab in Troy. This is a processing lab, they dry vermiculate, archive part of it and grind the remaining portion. This is transported back to Libby for analysis. Archiving will be done in Libby also. The sampling responsibility will remain in Libby as well.

D. C. Orr; Is there some sort of agreement of understanding between the state and the EPA regarding Troy?

Dick Sloan: I know there is an agreement between Montana and the EPA in terms of oversight and responsibility. It is renewed yeariy. Let me get this public document for LATAG, people can review it in the LATAG office.

Phillip Erquiaga: Lincoln County is taking samples and testing for results from Plywood Mill fire.

Meeting Adjourned: 8:10 p.m.

LATAG"s commentary on EPA's proposed plans for remediation of Operable Units 1 & 2.

Submitted on January 4, 2010

Introduction:

The Libby Area Technical Advisory Group (LATAG) operates with a Technical Assistance Grant from the EPA. The Group's chief role is to help the community participate in decision making at the Libby Asbestos Superfund Site. Congress made public involvement in decision making an important part of the Superfund process, insuring that those whose lives are affected by hazardous material contamination should have a say in actions to clean it up.

LATAG provides the following summary of its comments on EPA's proposed plans for clean-up of Operable Units 1 (former export plant) and 2 (former screening plant). The complete commentary document is available on request and will be available on the LATAG Website ------. Questions and comments are welcome and can be addressed at a regular LATAG meeting.

The Libby Area Technical Advisory Group requested Terry Spear, PhD, the group's technical advisor, to provide commentary on EPA's proposed plans for remediation of Operable Units 1 and 2. The LATAG Board has been working with Dr. Spear under contract this past year, bringing his expertise to assist the group in review of clean-up activities and make recommendations. Dr. Spear is a professor of industrial hygiene at the U of Montana/ Montana Tech., Butte, MT.

The LATAG Board has participated in the development of this document, and has reviewed and approved this final document generated by Dr. Spear for submission to the EPA in response to the request for commentary on proposed remedial plans for OU 1 and 2.

The risks to residents of Libby and visitors to the area due to exposure to Libby amphibole (LA) asbestos poses a unique threat due to the multiple pathways of exposure. Residents and workers in Libby may be exposed through initialation of LA in outdoor ambient air, inhalation while engaged in outdoor activities that disturb a LA in soil (e.g., mowing, raking, digging), and inhalation of LA indoors at home or at work. Because of the multiple pathways of exposure, the risks of cancer and non-cancer adverse health effects must be reduced as low as possible in all Operable Units. It is my opinion that the proposed Records of Decision (RODs) for Operable Units 1 and 2 are premature and do not guarantee protection of public health because of the following:

1. Uncertainties in risk assessment: Uncertainty in risk assessment is increased when using dose-response information only from animal studies, using dose-response information from high doses (occupational) to predict adverse health effects from low exposure, and not considering increased susceptibility of special groups within the exposed population. Susceptible groups in Libby include children whose lungs are not fully developed until early adulthood, or immune-compromised individuals. Risk models may underestimate exposures to children because: (a) their lungs are still developing, (b) children are known to have faster breathing rates; (c) children's breathing zone is closer to the ground and thus more likely to breathe soil/dust contaminated with LA; (d) activity patterns for children may increase their airborne exposures. Children's increased levels of physical activity result in proportionally greater minute volumes, likely leading to increased dose; (e) added risk for childhood exposure relates to their longer span of life years which allows for a significant cumulative dose from low level LA exposure followed by latencies adequate to cause significant health effects.

Current risk models may underestimate the risk associated with exposure to LA. Risk models based on working populations do not address susceptible populations or brief exposures to high levels of asbestos. The current risk models do not adequately address risks associated with low-dose exposure to the mixed- LA seen in Libby. The shape of the exposure-response curve at low cumulative exposures is not known. Current risk models assume a linear relationship and the slope is largely derived from occupational cohorts with much higher exposure levels. Exposure estimates provided in the epidemiological reports used to derive the current risk models are often highly uncertain. The cancer unit risks derived by USEPA (1986) and USEPA (2008) are based on mortality statistics from the 1970's, and consequently may not be applicable to populations that are exposed to asbestos today. The risk of developing cancer from an exposure to asbestos has increased as life expectancy has increased. Thus, cancer risk predications based on the current method may be underestimating risk by up to 20%. Finally, the current risk models do not address the risks posed by fibers less than 5 micrometers (um) in length or less than 0.25 um in diameter. Air sampling data from Libby reported by several researchers indicate that the majority of airborne fibers are less than 5 um in length when analyzed by transmission electron microscopy.

2. Lack of a reference concentration (RfC) for inhalation exposure to LA, including non-cancer risks of LA fibers less than 5 micrometers (um) in length and 0.25 um in diameter: The occurrence of non-cancer effects are a significant human health concern in the Libby community and affect a large segment of the population (18%). These non-cancer adverse health outcomes maybe be more significant than cancerous effects and are not addressed by the current cancer risk models. Studies of former workers and residents provide strong evidence that exposure to LA results in an increased incidence of non-cancer adverse effects, and that these effects occur in some individuals who appear to have had only low exposure.

Animal and *in vitro* studies suggest that fibers less than 5 um in length may play a role in fibrosis. EPA risk assessments based on regulated (or PCME) fibers with lengths greater than 5 um and widths greater than 0.25 um could grossly underestimate exposure to short and thin fibers and lead to uncertainties in risk estimates. Approximately 50% of the fibers seen in Libby are less than 5 um in length and 30% are less than 0.25 um in diameter. To reduce uncertainties and address the most significant health concerns in Libby, the reference concentration (RfC) for inhalation exposure to LA should be based on TEM analysis, including characterization of short (< 5 um) and thin (<0.25 um) fibers, and the role these fibers play in causing non-cancer adverse health effects.

- 3. Lack of epidemiology data in Libby: The toxicity values (carcinogenic and noncarcinogenic) for the mix of amphiboles in LA are being derived from doseresponse relationships for the first time. Dose-response information can be derived from a number of different studies which include human health effects when available as well as animal studies. It has been well established that when human health data is available, it provides the information that creates less uncertainty than when other methods are used. The National Toxicology Program (NTP) states that toxicology studies along with epidemiology studies are the best means available for identifying potential human hazards. To further reduce uncertainty in any Records of Decision in Libby, the risk of inhalation exposure to LA must be evaluated using epidemiological studies of the Libby community. Epidemiological studies, together with toxicological studies, are needed to assess the health effects of low-dose exposures to LA. These studies should include examination of family members of former mine workers, people with short-term high-dose exposures, people with long-term low-dose exposures, and children. In addition to epidemiological studies in Libby, EPA should consider recent casecontrol studies which provide evidence for increased mesothelioma and lung cancer risks at very low lifetime cumulative exposures to amphibole asbestos.
- 4. Gaps in solid matrix sampling data quantification: The current analytical methods for solid matrix sampling (i.e., soil sampling) is insufficient for cleanup decisions. The use of polarized light microscopy (PLM) for (a) identifying concentrations of Libby amphibole in environmental media (i.e., soils), and (b) basing cleanup strategies on these results is not protective of public health. It is

important to note that the 1% rule is not derived from a risk assessment or any other type of health-based analysis; therefore, it does not ensure that airborne asbestos fibers re-suspended by disturbing these soils will be below levels protective of human health. It is well established that disturbing soil containing less than 1% LA can re-suspend fibers and generate airborne concentrations that may pose a risk to public health. Analytical methods are needed that will reliably measure Libby amphibole in soils at concentrations well below 1%. In recent unpublished research outside of OU3, bulk samples of ash were reported as Trace <0.5 - 1% when analyzed by TEM method EPA/600/R-93/116. When analyzed by ASTM Method D 5755-03, these same samples showed between 4 to 12 million structures per gram for fibers < 5 microns and between 4 to 6 million structures per gram for fibers \geq 5 microns. The limitations of expressing asbestos concentrations in % are obvious from the above example when concentrations reported as trace contain millions of fibers per gram.

The estimation of bulk asbestos content in soil at OU1 and OU2 is uncertain because the soil sampling protocol may not accurately quantify the concentration of LA. Based on the preponderance of short fibers in Libby, use of the PLM method for final clearance is not appropriate. Soil samples that are below the limit of detection by polarized light microscopy (PLM) techniques may show high levels of asbestos fibers by other types of microscopic techniques (e.g., scanning electron microscope (SEM) or transmission electron microscopy (TEM)). In addition, for soils samples below the limit of detection by TEM analysis there is at least a 5% chance that the true value could be higher. Given the limitations of the analytical methods for identifying and quantifying LA in soils at OUI and OU2, it is impossible to say that the pathways of exposure have been eliminated.

5. Gaps in air sampling data quantification: The development of improved air sampling and analytical methods for LA includes (a) reducing inter-operator and inter-laboratory variability of the current fiber analytical methods, (b) developing fiber analytical methods with improved resolution to visualize smaller diameter fibers to assure more complete fiber counts, (c) developing a practical analytical method to differentiate between airborne exposures to asbestiform fibers from the asbestos minerals and fiber-like cleavage fragments from their non-asbestiform analogs, (d) developing analytical methods to assess fiber durability, (e) evaluating the collection efficiency of LA, and (f) comparison of direct and indirect sample preparation methods.

Because of the variability of LA in air, estimates of mean exposure concentrations are uncertain due to random variation between samples. Consequently, a large number of samples are required to ensure that the data are representative. In addition, risk calculations based on mean air concentrations, rather than the 95th upper confidence level (UCL), represent a source of uncertainty. The lack of a method for calculating the 95th UCL could result in an underestimation of risk. Additionally, air sampling data reported from a laboratory as non-detect are treated as zero. It is probable that some of these zero values contain LA that is not

quantified. Finally, air sampling data for LA represents only a point in time that may not be representative of exposure under various activities and environmental conditions.

These limitations, together with the limited activity-based sampling at OU1 and OU2, make the proposed Records of Decision highly uncertain. Detailed site-specific monitoring with analyses by TEM for more a comprehensive consideration of site-specific conditions related to OU1 and OU2 is needed. Risk assessments based on estimated mean anticipated exposures in OU1 and 2 are not appropriate, and risk calculations should be based on concentrations expected for the greatest exposure scenarios anticipated in OU1 and 2.

6. Gaps in exposure pathway quantification: The relationship between LA contamination of soil and indoor dust to airborne concentrations of LA is poorly understood. Further research is needed to better define this relationship. Activity-based sampling, together with reliable sampling and analytical methods for LA in solid matrices (soils and dust) and air, should provide for a better understanding of the relationship between LA contamination of soil and indoor dust to airborne concentrations of LA. Exposure parameters of Central Tendency Exposure (CTE) and Reasonable Maximum Exposure (RME) can be uncertain and this uncertainty would be reduced by activity-based sampling.

EPA has conducted activity-based sampling at residential and commercial properties in Libby in 2007 and 2008. Preliminary review of these results indicates that the current removal action level for LA in soil is likely to be revised to a lower concentration. Limited activity-based sampling has been done at OU1 and OU2. At OU1, only 8 activity-based sampling values are available, and these values may not be representative of the true long term average exposure concentration for soil disturbances at OU1. The mean is highly uncertain and may be low. The data may underestimate exposure and risk because most of the ground was wetted to suppress dust dispersion before mowing.

Extensive activity-based sampling, using TEM analysis to characterize the entire spectrum of exposures generated (size and type of amphibole), should be performed throughout the Libby Asbestos Site and within all Operable Units to determine potential cumulative exposure of residents to Libby amphibole. Activity-based sampling must be specific to each Operable Unit and used to simulate likely site activities and potential exposures associated with these activities. In addition to the collection of personal samples at appropriate breathing zone height, the activity based sampling should include surface wipe samples of protective clothing worn and equipment used by the researchers. Research in the Libby area has demonstrated a strong potential for clothing and equipment contamination among people working with and around material contaminated with LA. This contamination may serve as a secondary source of exposure to those that work or recreate around contaminated material. In addition, family members, etc., not directly exposed to LA may be exposed while laundering contaminated clothing. Perimeter samples must be collected to

document migration concurrent with the activity-based sampling. Background (control) samples must be collected concurrent with and upwind in general area as the activity-based sampling at a distance sufficient to prevent being influenced by the simulated activities. Soil moisture and wind data must be collected in conjunction with the activity based sampling. The analytical data obtained must contain the full details on the particle size (length, width, mineral type) of all asbestos structures observed, so that these data can be used in prospective studies (including studies of low dose and childhood exposure) and cancer and non-cancer risk models.

7. Gaps in cleanup efficacy data and elimination of exposure pathways: Because trace levels or higher levels of LA are present in soil at OU1 and OU2 and in other areas throughout Libby, future exposure associated with disturbing on-site soil during construction or redevelopment events at these sites is a potential exposure pathway. In addition, trace levels or higher levels of LA are vulnerable to disturbance by various anthropogenic or natural activities. Consequently, residents can be potentially exposed to asbestos fibers released from asbestoscontaining debris or soil due to disturbance by common human intrusive activities or natural processes (e.g., wind erosion, precipitation, and extreme changes in temperature) either now or in the future. Uncontrolled drainage of water from areas contaminated with LA may result in environmental dispersion of asbestos.

Indoor stationary air monitoring performed at varying time periods following completion of cleanup actions at specific properties in Libby showed low airborne concentrations of LA following cleanup, and the level remained low for about a year. However, at some of the homes, there appeared to be an upward trend in airborne levels of LA, suggesting the potential for re-contamination. This indicates pathways of exposure still exist after the completion of cleanup activities. EPA should base clean-up targets on activities that have been shown to produce elevated concentrations by TEM analysis. Detailed site-specific monitoring using TEM methods is needed for more a comprehensive consideration of site-specific conditions related to OU1 and OU2 to assure that exposure pathways have been eliminated.

Summary

From the above discussion, it is clear that we still do not have enough information to estimate cancer and non-cancer risks from community exposures to LA associated with OU1 and OU2. Because of the complex multiple pathways of exposure to LA in the Libby area, and the lack of representative activity based sampling exposure data from the OU1 and OU2, uncertainties in exposure and risk of adverse health effects associated with OU1 and OU2 could result in an underestimate of cumulative cancer and non-cancer risks from exposure to LA in Libby.

The potential future health risks to Libby residents from exposure to LA is unknown because of uncertainties associated with: (a) the methods used to analyze asbestos; (b) the estimation of potential exposure to airborne asbestos from contaminated

soils; (c) the lack toxicological information specific to LA; (d) the relative toxicity of short asbestos fibers (i.e., fibers $<5~\mu m$ in length) in non-cancer health effects and (e) the lack of epidemiologic data evaluating the risk of adverse health outcomes associated with low-level, intermittent exposures to LA.

Before any Records of Decision are implemented in Libby, the uncertainties outlined above must be addressed:

- (a) Improved analytical methods must be used to quantify levels of LA in both soil and air at OU1 and OU2 and throughout Libby.
- (b) Conduct site-specific, activity-based field tests, during all seasons of the year, to assist in developing empirical relationships for exposure scenarios involving re-suspension of asbestos fibers from solid media (e.g., soil, dust) into air. Without knowledge of such relationships, the assurance of the elimination of exposure pathways and the protection of public health is uncertain. These limitations impede site-specific exposure assessment and risk characterization.
- (c) Execute a comprehensive LA toxicity assessment to determine the effectiveness of the Libby clean-up actions and whether more actions are required. The toxicity assessment should include the effects of low dose exposure on susceptible populations, including children.

 Toxicology studies are also needed to adequately define the toxicity associated with short (<5 um) LA fibers since these fibers are predominant in Libby, including ambient air.
- (d) Determine the reference concentration (RfC) for inhalation exposure to LA, including the risk contribution of LA fibers less than 5 micrometers (um) in length and 0.25 um in diameter.
- (e) Sponsor epidemiologic studies employing the use of activity-based sampling results from Libby to allow the reconstruction of lower-bound estimates of exposure to LA associated with clinically detectable disease.

In policies issued by EPA in their Risk Assessment Guidance for Superfund, EPA is required to understand the cumulative risk from all exposures in the Libby area, and not just one OU. Recent case-control studies provide evidence for increased mesothelioma and lung cancer risks at very low lifetime cumulative exposures to amphibole asbestos.

The Risk Assessment Guidance document requires EPA determine the complete exposure pathways that exist for the Libby site. EPA is required to quantify the magnitude, frequency and duration of exposure for each pathway identified in Libby to determine cumulative risk. EPA is required to estimate reasonable maximum exposures for individual pathways. Given the complex multiple pathways of exposure to LA in the Libby area, the combination of exposures across pathways must be considered in cumulative risk estimates.

Exposure assessments must consider past, present, and future exposures. The Libby population has already had significant exposures to date that must be included in any benchmarks with consideration of future acceptable exposures. This is critically important for subpopulations that may be at increased risk from exposures to LA due to

increased sensitivity, behavior patterns that may result in high exposure, and/or current or past exposures from other sources. Subpopulations in Libby that may be more sensitive to exposure to LA include infants and children, elderly people, and people with chronic illnesses.